



US009578873B2

(12) **United States Patent**
Folgarait et al.

(10) **Patent No.:** **US 9,578,873 B2**
(45) **Date of Patent:** **Feb. 28, 2017**

(54) **METHODS FOR CONTROLLING
LEAF-CUTTING ANTS**

FOREIGN PATENT DOCUMENTS

(71) Applicant: **UNIVERSIDAD NACIONAL DE
QUILMES**, Bernal-Prov. de Buenos
Aires (AR)

EP	2578222	*	10/2013	A61K 36/53
GB	1516099		6/1978		
WO	9011012	A1	10/1990		
WO	9102051	A1	2/1991		
WO	9424871	A1	11/1994		
WO	9525430	A1	9/1995		
WO	9618722	A2	6/1996		
WO	9716974	A1	5/1997		
WO	0228189	A2	4/2002		
WO	2004052103	A1	6/2004		
WO	2006121350	A1	11/2006		

(72) Inventors: **Patricia Folgarait**, Bernal (AR);
Daniela Goffre, Bernal (AR); **Jorge
Ariel Marfetan**, Bernal (AR)

(73) Assignee: **UNIVERSIDAD NACIONAL DE
QUILMES**, Bernal, Prov. de Buenas
Aires (AR)

OTHER PUBLICATIONS

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 0 days.

Calle et al. Leaf-cutting ants revisited: Towards rational manage-
ment and control. *Int. J. Pest Management*, 2012, vol. 58, pp. 235.*
Alves et al. in insecticide-development of safer and more effective
technology, Ed. Trdan, InTech, 2013, Croatis, Chapter 9, Plant
derived products for leaf-cutting ants control, p. 264.*
Varon (Distribution and foraging by the leaf-cutting ant, *Atta
cephalotes* L., in coffee plantations with different types of manage-
ment and landscape contexts, and alternatives to insecticides for its
control, 2006, Thesis, chapter 5, Effect of baits based on fungal
strains or botanical extracts on *Atta cephalotes* colonies).*
Mercahrt (Texas Leaf cutting ants, *Insects in the City*, 2015, pp. 1-5,
<http://citybugs.tamu.edu/factsheets/landscape/ants/ent-1002/>).*
Currie (Prevalence and impact of virulent parasite on a tripartite
mutualism, *Oecologia*, 2001, vol. 128, p. 99-106).*
Lopez et al. (*Matrhizium anisopliae* and *Trichoderma viride* for
control of nests of the fungus-growing ant, *Atta cephalotes*, *Bio-
logical Contrl.* 2003, vol. 27, pp. 194-200).*
Terezinha M.C. Della Lucia, "As Formigas Cortadeiras", 1993,
Chapters 1 and 8, pp. 1-3,84-105.
Mark S. Goettel, et al. "Chapter V-3 Fungi: Hyphomycetes", 1997,
pp. 213-249. Lawrence Lacey, "Manual of Techniques Insect
Pathology".
J.J. Knapp, et al. "Factors Controlling Foraging Patterns in the
Leaf-Cutting Ant *Acromyrmex octospinosus*", 1990, pp. 382-409.
Bert Holldobler, et al. "The Ants", 1990, Chapter 17, pp. 596-608.

(21) Appl. No.: **14/351,041**

(22) PCT Filed: **Oct. 10, 2012**

(86) PCT No.: **PCT/IB2012/055484**

§ 371 (c)(1),

(2) Date: **Apr. 10, 2014**

(87) PCT Pub. No.: **WO2013/054272**

PCT Pub. Date: **Apr. 18, 2013**

(65) **Prior Publication Data**

US 2014/0322339 A1 Oct. 30, 2014

Related U.S. Application Data

(60) Provisional application No. 61/545,792, filed on Oct.
11, 2011.

(51) **Int. Cl.**

A01N 25/00 (2006.01)

A01N 63/04 (2006.01)

(52) **U.S. Cl.**

CPC **A01N 25/006** (2013.01); **A01N 63/04**
(2013.01)

(58) **Field of Classification Search**

None

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,344,208	B1 *	2/2002	Howse	A01M 1/20 424/405
6,403,085	B1	6/2002	Stimac		
7,951,389	B2	5/2011	Stamets		
2002/0124458	A1 *	9/2002	Clark	A01M 1/026 43/124
2002/0146394	A1 *	10/2002	Stamets	A01N 63/04 424/93.5

* cited by examiner

Primary Examiner — Bethany Barham

Assistant Examiner — Ping Cao

(74) *Attorney, Agent, or Firm* — Nath, Goldberg &
Meyer; Joshua B. Goldberg; Tanya E. Harkins

(57) **ABSTRACT**

Kits for biological control of leaf-cutting ants are disclosed.
The kits comprise at least two granulated bait formulations,
each formulation containing a) a biologic control agent for
the ants, and b) one masking substance for the control agent
and/or one attractant, wherein the control agent is the same
in all formulations, and wherein the masking substance
and/or attractant are different in each formulation.

14 Claims, 15 Drawing Sheets